

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method of encoding video data comprising:
 - dividing each frame of a video signal into a plurality of macroblocks;
 - assigning, for each Inter frame, one or more of the plurality of macroblocks to be Intra refreshed to a first slice group;
 - assigning, for each frame, ~~a~~the remainder of the plurality of macroblocks to one or more other slice groups wherein no macroblock to be Intra refreshed is assigned to the one or more other slice groups;
 - generating a map indicating what macroblocks were assigned to the first slice group, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs; and
 - indexing the map for each subsequent frame to correspond to the macroblocks to be Intra refreshed in the subsequent frame.
2. (original) The method of claim 1 further comprising the step of transmitting video data comprising the plurality of macroblocks and the map to another device.
3. (currently amended) A method of decoding a video signal comprising:
 - receiving a signal comprising a plurality of macroblocks, wherein one or more of the macroblocks is assigned to a first slice group and the remaining macroblocks are assigned to one or more other slice groups, and a map indicating what macroblocks were assigned to the first slice group, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs;
 - decoding the one or more macroblocks assigned to the first slice group as Intra encoded without referring to macroblocks not assigned to the first slice group;
 - decoding the remaining macroblocks assigned to one or more other slice groups; and
 - generating a frame of video from the decoded macroblocks.

4. (original) The method of claim 3 further comprising:
indexing the map for a subsequent frame;
decoding one or more macroblocks corresponding to the subsequent frame and
assigned to a first slice group of the subsequent frame without referring to
macroblocks not assigned to the first slice group in the subsequent frame;
decoding the remaining macroblocks corresponding to the subsequent frame; and
regenerating the subsequent frame of video from the decoded macroblocks.
5. (original) The method of claim 3 further comprising the step of displaying the generated frame.
6. (cancelled)
7. (currently amended) An apparatus for encoding a video signal, the apparatus comprising a CPU and an image processing engine, wherein the apparatus is programmed to:
divide each frame of a video signal into a plurality of macroblocks;
assign one or more of the plurality of macroblocks for each Inter frame to be Intra refreshed to a first slice group;
assign ~~a~~the remainder of the plurality of macroblocks for each frame to one or more other slice groups;
generate a map indicating what macroblocks were assigned to the first slice group, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs; and
index the map for each subsequent frame to correspond to the macroblocks to be Intra refreshed in the subsequent frame.
8. (original) The apparatus of claim 7 further comprising a video capture device.

9. (currently amended) An apparatus for decoding video data, the apparatus comprising a CPU programmed to:
- receive a signal comprising a plurality of macroblocks, wherein one or more of the macroblocks is assigned to a first slice group and the remaining macroblocks are assigned to one or more other slice groups, and a map indicating what macroblocks were assigned to the first slice group, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs;
 - decode the one or more macroblocks assigned to the first slice group as Intra encoded macroblocks without reference to macroblocks outside the first slice group;
 - decode the remaining macroblocks assigned to one or more other slice groups as Intra or Inter coded macroblocks; and
 - generate a frame of video from the decoded macroblocks.
10. (original) The apparatus of claim 9 further comprising a display device, wherein the CPU is programmed to effect display of the generated frame of video on the display device.
11. (currently amended) A method of implementing an Intra refresh mechanism for a sequence of video pictures, each picture comprising a plurality of macroblocks, the method comprising:
- for a first picture:
 - assigning a small subset of the plurality of macroblocks to be Intra refreshed in the first picture to a first slice group;
 - assigning a remainder of the plurality of macroblocks to one or more additional slice groups;
 - generating a macroblock map of the first picture indicating what macroblocks are assigned to which slice group for the first picture, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs;
 - encoding the macroblocks of the first picture, wherein at least the macroblocks of the first slice group are Intra coded; and

transmitting the encoded macroblocks of the first picture and the macroblock map of the first picture; and
for at least one subsequent picture:
 assigning a small subset of the plurality of macroblocks to be Intra refreshed in the at least one subsequent picture to a first slice group, wherein the small subset of the plurality of macroblocks to be Intra refreshed in the at least one subsequent picture is different from the small subset of the plurality of macroblocks to be Intra refreshed in the first picture;
 assigning a remainder of the plurality of macroblocks to one or more additional slice groups;
 generating a macroblock map of the at least one subsequent picture indicating what macroblocks are assigned to which slice group for the at least one subsequent picture, the map comprising a list of numbers, one for each coded macroblock, specifying the slice group to which each coded macroblock belongs;
 encoding the macroblocks of the at least one subsequent picture, wherein at least the macroblocks of the first slice group are Intra coded; and
 transmitting the encoded macroblocks of the at least one subsequent picture and the macroblock map of the at least one subsequent picture.

12. (previously presented) The method of claim 11 further comprising:

 for a further subsequent picture:
 assigning a small subset of the plurality of macroblocks to be Intra refreshed in the further subsequent picture to a first slice group, wherein the small subset of the plurality of macroblocks to be Intra refreshed in the further subsequent picture corresponds to the small subset of the plurality of macroblocks to be Intra refreshed in the first picture;
 assigning a remainder of the plurality of macroblocks to one or more additional slice groups;
 encoding the macroblocks of the at least one subsequent picture, wherein at least the macroblocks of the first slice group are Intra coded; and

transmitting the encoded macroblocks of the at least one subsequent picture
and an index corresponding to a macroblock map of the first picture, such
that the macroblock map of the first picture need not be transmitted again.

13. (previously presented) The method of claim 12 wherein the macroblock map of the first picture and the macroblock map of the at least one subsequent picture are transmitted at the start of the communication.
14. (previously presented) The method of claim 13 wherein the macroblocks are encoded according to the H.264 standard.
15. (previously presented) The method of claim 11 wherein the macroblocks are encoded according to the H.264 standard.
16. (currently amended) A method of implementing an Intra refresh mechanism for a sequence of video pictures, each picture comprising a plurality of macroblocks, a first slice group, and one or more additional slice groups, the method comprising:

for a first picture:

receiving a plurality of macroblocks of the first picture;
receiving a macroblock map of the first picture indicating what macroblocks
are assigned to the first slice group and what macroblocks are assigned to
the one or more additional slice groups wherein a small subset of the
plurality of macroblocks are assigned to the first slice group, the map
comprising a list of numbers, one for each coded macroblock, specifying
the slice group to which each coded macroblock belongs;
decoding macroblocks of a first slice group as Intra coded;
decoding a remainder of the plurality of macroblocks belonging to the one or
more additional slice groups; and

for at least one subsequent picture:

receiving a plurality of macroblocks of the at least one subsequent picture;
receiving a macroblock map of the at least one subsequent picture indicating
what macroblocks are assigned to the first slice group and what
macroblocks are assigned to the one or more additional slice groups, the

map comprising a list of numbers, one for each coded macroblock,
specifying the slice group to which each coded macroblock belongs,

wherein a small subset of the plurality of macroblocks are assigned to the first slice group and wherein the small subset of the plurality of macroblocks assigned to the first slice group is a different small subset of the plurality of macroblocks assigned to the first slice group in the first picture;

decoding macroblocks of a first slice group as Intra coded;

decoding a remainder of the plurality of macroblocks belonging to the one or more additional slice groups.

17. (previously presented) The method of claim 16 further comprising:

for the first picture:

storing the received macroblock map of the first picture; and

for the second picture:

storing the received macroblock map of the at least one subsequent picture.

18. (previously presented) The method of claim 17 further comprising:

for a further subsequent picture:

receiving a plurality of macroblocks of the further picture;

retrieving a macroblock map of the first picture indicating what macroblocks are assigned to the first slice group and what macroblocks are assigned to the one or more additional slice groups wherein a small subset of the plurality of macroblocks are assigned to the first slice group and wherein the small subset of the plurality of macroblocks assigned to the first slice group is the same small subset of the plurality of macroblocks assigned to the first slice group in the first picture;

decoding macroblocks of a first slice group as Intra coded;

decoding a remainder of the plurality of macroblocks belonging to the one or more additional slice groups.

19. (previously presented) The method of claim 18 wherein the macroblock map of the first picture and the macroblock map of the at least one subsequent picture are transmitted at the start of the communication.
20. (previously presented) The method of claim 16 wherein the macroblocks are encoded according to the H.264 standard.